Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A bioinformatically detectable isolated oligonucleotide which is endogenously processed from a hairpin-shaped precursor, and anneals to a portion of a mRNA transcript of a target gene, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs: 1-385 and 386-49787.

[c2] A bioinformatically detectable isolated oligonucleotide having a nucleotide sequence selected from the group consisting of SEQ ID NOs: 1-385 and 386-49787.

[c3] A bioinformatically detectable first oligonucleotide which is a portion of a mRNA transcript of a target gene, and anneals to a second oligonucleotide that is endogenously processed from a hairpin precursor, wherein binding of said first oligonucleotide to said second oligonucleotide represses expression of said target gene, and wherein nucleotide sequence of said second nucleotide is selected from the group consisting of SEQ ID NOs: 1-385 and 386-49787.

[c4] A bioinformatically detectable oligonucleotide having a nucleotide sequence selected from the group consisting of SEQ ID NOs: 2337129-4223628.

[c5] A bioinformatically detectable isolated oligonucleotide which anneals to a portion of a mRNA transcript of a target gene associated with Bordetella pertussis infection, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs shown in Table 13 row 2.

[c6] A bioinformatically detectable isolated oligonucleotide which anneals to a portion of a mRNA transcript of a target gene associated with Brucella suis 1330 infection, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs shown in Table 13 row 3.

[c7] A bioinformatically detectable isolated oligonucleotide which anneals to a portion of a mRNA transcript of a tar-

get gene associated with Chlamydia trachomatis infection, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs shown in Table 13 row 4.

[c8] A bioinformatically detectable isolated oligonucleotide which anneals to a portion of a mRNA transcript of a target gene associated with Chlamydophila pneumoniae AR39 infection, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs shown in Table 13 row 5.

[c9] A bioinformatically detectable isolated oligonucleotide which anneals to a portion of a mRNA transcript of a target gene associated with Chlamydophila pneumoniae CWL029 infection, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide has at least 80% sequence identity with a nucleotide sequence selected from the group consisting of SEQ ID NOs shown in Table 13 row 6.

[c10] A method for treatment of a disease involving a tissue in which a protein is pathologically expressed to an undesirable extent, said protein having a messenger RNA, the method comprising: providing a material which modulates activity of a microRNA oligonucleotide which binds complementarily to a segment of said messenger RNA; and introducing said material into said tissue, causing modulation of said activity of said microRNA oligonucleotide and thereby modulating expression of said protein in a desired manner.

[c11] A method for treatment of a disease involving tissue in which a protein is pathologically expressed to an undesirable extent, said protein having a messenger RNA, the method comprising: providing a material which at least partially binds a segment of said messenger RNA that is bound complementarily by a microRNA oligonucleotide, thereby modulating expression of said protein; and introducing said material into said tissue, thereby modulating expression of said protein.

[c12] A method for treatment of a disease involving a tissue in which a protein is pathologically over-expressed, said protein having a messenger RNA, the method comprising: providing a microRNA oligonucleotide which binds complementarily to a segment of said messenger RNA;

and introducing said microRNA oligonucleotide into said tissue, causing said microRNA oligonucleotide to bind complementarily to a segment of said messenger RNA and thereby inhibit expression of said protein.

[c13] A method for treatment of a disease involving a tissue in which a protein is pathologically over-expressed, said protein having a messenger RNA, the method comprising: providing a chemically-modified microRNA oligonucleotide which binds complementarily to a segment of said messenger RNA; and introducing said chemically-modified microRNA oligonucleotide into said tissue, causing said microRNA oligonucleotide to bind complementarily to a segment of said messenger RNA and thereby inhibit expression of said protein.

[c14] A method for treatment of a disease involving a tissue in which a protein is pathologically under-expressed, said protein having a messenger RNA, the method comprising: providing an oligonucleotide that inhibits activity of a microRNA oligonucleotide which binds complementarily to a segment of said messenger RNA; and introducing said oligonucleotide into said tissue, causing inhibition of said activity of said microRNA oligonucleotide and thereby promotion of translation of said protein.

[c15] A method for treatment of a disease involving a tissue in

which a protein is pathologically under-expressed, said protein having a messenger RNA, the method comprising: providing a chemically-modified oligonucleotide that inhibits activity of a microRNA oligonucleotide which binds complementarily to a segment of said messenger RNA; and introducing said chemically-modified oligonucleotide into said tissue, causing inhibition of said activity of said microRNA oligonucleotide and thereby promotion of translation of said protein.

[c16] A method for diagnosis of a disease involving a tissue in which a protein is expressed to abnormal extent, said protein having a messenger RNA, the method comprising: assaying a microRNA oligonucleotide which at least partially binds a segment of said messenger RNA and modulates expression of said protein, thereby providing an indication of at least one parameter of said disease.

[c17] A method for detection of expression of an oligonucleotide, the method comprising: determining a first nucleotide sequence of a first oligonucleotide, which first nucleotide sequence is not complementary to a genome of an organism; receiving a second nucleotide sequence of a second oligonucleotide whose expression is sought to be detected; designing a third nucleotide sequence that is complementary to said second nucleotide sequence of said second oligonucleotide, and a fourth nu-

cleotide sequence that is complementary to a fifth nucleotide sequence which is different from said second nucleotide sequence of said second oligonucleotide by at least one nucleotide; synthesizing a first oligonucleotide probe having a sixth nucleotide sequence comprising said third nucleotide sequence followed by said first nucleotide sequence of said first oligonucleotide, and a second oligonucleotide probe having a seventh nucleotide sequence comprising said fourth nucleotide sequence followed by said first nucleotide sequence of said first oligonucleotide; locating said first oligonucleotide probe and said second oligonucleotide probe on a microarray platform; receiving an RNA test sample from at least one tissue of said organism; obtaining size-fractionated RNA from said RNA test sample; amplifying said size-fractionated RNA; hybridizing said adaptor-linked RNA with said first and second oligonucleotide probes on said microarray platform; and determining expression of said first oligonucleotide in said at least one tissue of said organism, based at least in part on said hybridizing.

[c18] A bioinformatically detectable isolated polynucleotide which is endogenously processed into a plurality of hairpin-shaped precursor oligonucleotides, each of which is endogenously processed into a respective oligonu-

cleotide, which in turn anneals to a portion of a mRNA transcript of a target gene, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene.

[c19] A bioinformatically detectable isolated oligonucleotide which is endogenously processed from a hairpin-shaped precursor, and anneals to a portion of a mRNA transcript of a target gene, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said target gene does not encode a protein.

[c20] A bioinformatically detectable isolated oligonucleotide which is endogenously processed from a hairpin-shaped precursor, and anneals to a portion of a mRNA transcript of a target gene, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein a function of said oligonucleotide comprises modulation of cell type.

[c21] A bioinformatically detectable isolated oligonucleotide which is endogenously processed from a hairpin-shaped precursor, and anneals to a portion of a mRNA transcript of a target gene, wherein binding of said oligonucleotide to said mRNA transcript represses expression of said target gene, and wherein said oligonucleotide is mater-

nally transferred by a cell to at least one daughter cell of said cell, and a function of said oligonucleotide comprises modulation of cell type of said daughter cell.

[c22] A method for bioinformatic detection of microRNA oligonucleotides, the method comprising: bioinformatically detecting a hairpin-shaped precursor oligonucleotide; bioinformatically detecting an oligonucleotide which is endogenously processed from said hairpin-shaped precursor oligonucleotide; and bioinformatically detecting a target gene of said oligonucleotide wherein said oligonucleotide anneals to at least one portion of a mRNA transcript of said target gene, and wherein said binding represses expression of said target gene, and said target gene is associated with a disease.